

WHAT IS CLAIMED IS:

1. A composition comprising:
 - a.) trans-1,2-dichloroethylene; and
 - 5 b.) at least one solvent selected from the group consisting of:
 - i.) oxygen-containing solvents selected from the group consisting of alcohols, ketones, esters, siloxanes, and ethers; and
 - 10 ii.) hydrocarbon solvents selected from the group consisting of those represented by C_tH_{2t+2} and C_tH_{2t} , wherein t is from 4 to 12; and
 - c.) at least one inerting agent selected from the group consisting of:
 - 15 i.) hydrofluorocarbon inerting agents selected from the group consisting of those represented by the formula $C_xH_yF_{(2x+2-y)}$, wherein x is from 3 to 8, y is from 1 to 4, the mole ratio of F/H in the hydrofluorocarbon inerting agent is greater than
 - 20 1.6, and wherein when the inerting agent is hydrofluorocarbon the weight ratio of hydrofluorocarbon inerting agent to solvent is at least about 1.5;
 - ii.) hydrofluorocarbon ether inerting agents selected from the group consisting of those represented by the formula $C_rF_{2r+1}OC_sH_{2s+1}$, wherein r and s are independently selected from 1 to 6, r is greater than or equal to 2s, and wherein when the inerting agent is hydrofluorocarbon ether the weight ratio of hydrofluorocarbon ether inerting agent to
 - 25 solvent is at least about 3; and
 - iii.) hydrochlorofluorocarbon inerting agents selected from the group consisting of those represented by the formulae $C_2HCl_2F_3$, C_2HClF_4 , and $C_3HCl_2F_5$, and wherein when the inerting agent is
 - 30 hydrochlorofluorocarbon the weight ratio of hydrochlorofluorocarbon inerting agent to solvent is at least about 2,

wherein said composition is non-flammable by Flame Extension Test ASTM D-3065 and Flash Point-Tag Closed Cup Test ASTM D-56-82, and said composition has a Kauri Butanol value of at least about 40 by ASTM 1133-94.

2. The composition of Claim 1, wherein said composition has a Kauri Butanol value of at least about 100 by ASTM 1133-94.

3. The composition of Claims 1 or 2, wherein the ratio of (inerting agent evaporation index)/(solvent evaporation index) is from about 0.1 to about 100.

4. The composition of Claims 1 or 2 wherein said oxygen-containing solvent is selected from the group consisting of alcohols having a normal boiling point greater than about 60°C and less than about 120°C, and represented by the formula $C_uH_{2u+1}OH$, wherein u is from 1 to 4; ketones having a normal boiling point greater than about 50°C and less than about 110°C, and represented by the formula $C_vH_{2v+1}COC_wH_{2w+1}$, wherein v and w are 1 or greater and v+w is at most 5; esters having a normal boiling point greater than about 55°C and less than about 130°C, and represented by the formula $C_kH_{2k+1}COOC_mH_{2m+1}$, wherein k and m are 1 or greater and k+m is at most 4; siloxanes, hexamethyldisiloxane $[(CH_3)_3Si]_2O$, hexaethyldisiloxane $[(C_2H_5)_3Si]_2O$, and octamethyltrisiloxane $((CH_3)_3SiOSi(CH_3)_2OSi(CH_3)_3)$; and ethylene glycol dialkyl ethers represented by the formula $C_aH_{2a+1}(OCH_2CH_2)_bOC_aH_{2a+1}$, wherein a is 1 to 3 and b is 1 to 6.

5. The composition of Claims 1 or 2 wherein said hydrocarbon solvent has a normal boiling point greater than about -15°C and less than about 130°C.

6. The composition of Claims 1 or 2 wherein said hydrofluorocarbon inerting agent is selected from the group consisting of $\text{CF}_3\text{CHF}_2\text{CF}_3$ (HFC-227ea), $\text{CF}_3\text{CF}_2\text{CF}_2\text{H}$ (HFC-227ca), $\text{CF}_3\text{CH}_2\text{CF}_3$ (HFC-236fa), $\text{CF}_3\text{CHF}_2\text{CF}_2\text{H}$ (HFC-236ea), $\text{CF}_2\text{HCF}_2\text{CF}_2\text{H}$ (HFC-236ca), $\text{CF}_3\text{CF}_2\text{CFH}_2$ (HFC-236cb), $\text{CH}_2\text{FCF}_2\text{CHF}_2$ (HFC-245ca), $\text{CHF}_2\text{CHFCHF}_2$ (HFC-245ea), $\text{CH}_2\text{FCHF}_2\text{CF}_3$ (HFC-245eb), $\text{CHF}_2\text{CH}_2\text{CF}_3$ (HFC-245fa), $\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{H}$ (HFC-329p), $\text{CF}_3\text{CF}_2\text{CFHCF}_3$ (HFC-329me), $\text{CF}_3\text{CF}_2\text{CF}_2\text{CFH}_2$ (HFC-338q), $\text{CF}_3\text{CF}_2\text{CH}_2\text{CF}_3$ (HFC-338mf), $\text{CF}_3\text{CF}_2\text{CFHCF}_2\text{H}$ (HFC-338pe), $\text{CF}_3\text{CFHCF}_2\text{CF}_2\text{H}$ (HFC-338pce), $\text{CHF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{H}$ (HFC-338pcc), $\text{CF}_3\text{CFHCFHCF}_3$ (HFC-338mee), $\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{H}$ (HFC-42-11p), $\text{CF}_3\text{CF}_2\text{CFHCF}_2\text{CF}_3$ (HFC-42-11mce), $\text{CF}_3\text{CF}_2\text{CF}_2\text{CFHCF}_3$ (HFC-42-11me), $\text{CF}_3\text{CF}_2\text{CH}_2\text{CF}_2\text{CF}_3$ (HFC-43-10mcf), $\text{CF}_3\text{CF}_2\text{CF}_2\text{CH}_2\text{CF}_3$ (HFC-43-10mf), $\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CFH}_2$ (HFC-43-10q), $\text{CF}_3\text{CF}_2\text{CF}_2\text{CFHCF}_2\text{H}$ (HFC-43-10pe), $\text{CF}_3\text{CF}_2\text{CFHCF}_2\text{CF}_2\text{H}$ (HFC-43-10pce), $\text{CF}_3\text{CHFCH}_2\text{CF}_2\text{CF}_3$ (HFC-43-10mee), $\text{CF}_2\text{HCF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{H}$ (HFC-43-10pccc), $\text{CF}_3\text{CFHCF}_2\text{CF}_2\text{CF}_2\text{H}$ (HFC-43-10pccc), $\text{CF}_3\text{CFHCF}_2\text{CFHCF}_3$ (HFC-43-10mece), and $\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{H}$ (HFC-52-13p).

7. The composition of Claims 1 or 2 wherein said hydrofluorocarbon ether inerting agent is selected from the group consisting of $\text{C}_4\text{F}_9\text{OCH}_3$ and $\text{C}_4\text{F}_9\text{OC}_2\text{H}_5$.

8. The composition of Claims 1 or 2 wherein said hydrochlorofluorocarbon inerting agent is selected from the group consisting of CHCl_2CF_3 (HCFC-123), $\text{CHCl}_2\text{CF}_2\text{Cl}$ (HCFC-123a), $\text{CCl}_2\text{FCHF}_2$ (HCFC-123b), CHCl_2CF_3 (HCFC-124), $\text{CCl}_2\text{F}_2\text{CF}_2\text{H}$ (HCFC-124a), $\text{CHF}_2\text{CCl}_2\text{CF}_3$ (HCFC-225aa), $\text{CHCl}_2\text{CCl}_2\text{CF}_3$ (HCFC-225ba), $\text{CHF}_2\text{CCl}_2\text{CCl}_2\text{F}_2$ (HCFC-225bb), $\text{CHCl}_2\text{CF}_2\text{CF}_3$ (HCFC-225ca), $\text{CHCl}_2\text{CF}_2\text{CCl}_2\text{F}_2$ (HCFC-225cb), $\text{CHF}_2\text{CF}_2\text{CCl}_2\text{F}$ (HCFC-225cc), $\text{CCl}_2\text{F}_2\text{CHCl}_2\text{CF}_3$ (HCFC-225da), $\text{CCl}_2\text{F}_2\text{CHFCCl}_2\text{F}_2$ (HCFC-225ea), and $\text{CF}_3\text{CHFCCl}_2\text{F}$ (HCFC-225eb).

9. The composition of Claims 1 or 2 wherein said inerting agent comprises $\text{CF}_3\text{CHFCH}_2\text{CF}_2\text{CF}_3$ (HFC-43-10mee), and said solvent comprises ethanol.

10. The composition of Claim 9 comprising about 63 weight% trans-1,2-dichloroethylene, about 13 weight% ethanol, and about 24 weight% $\text{CF}_3\text{CHFCHFCF}_2\text{CF}_3$ (HFC-43-10mee).

11. The composition of Claims 1 or 2 further comprising at least one aerosol propellant selected from the group consisting of air, nitrogen, carbon dioxide, difluoromethane, trifluoromethane, difluoroethane, trifluoroethane, and tetrafluoroethane.

12. A process for removing residue from a surface, comprising the steps of:

- a.) contacting the surface with the composition of Claims 1, 2, 9, 10 or 11; and
- b.) recovering the surface substantially free of residue.

13. The process of Claim 12, wherein the surface comprises an integrated circuit device, and the residue comprises soldering flux.

14. The process of Claim 12, wherein the surface comprises an interior surface of a compression refrigeration apparatus, and the residue comprises conventional refrigeration lubricant, particulates, and/or rust.

15. The composition of Claims 1, 2, 9, 10 or 11, further comprising a mold release agent.

16. A process for depositing mold release agent on the surface of a mold, comprising:

- a.) contacting the surface of the mold with the composition of Claim 13; and

[illegible]